

1 **In the Claims**

2 Claims 1-76 and 78 remain in the application for consideration and are
3 listed as follows:

4

5 1. (Previously Presented) In a distributed computing environment, a
6 computer-implemented method for implementing workflow responsive to a
7 directory object state change, the method comprising:

8 automatically detecting a state change to an object in a directory; and

9 responsive to detecting the state change, automatically:

10 mapping the state change to the object to a workflow comprising a
11 set of tasks; and

12 executing the tasks to achieve a desired state in the directory.

13

14 2. (Previously Presented) The method of claim 1, wherein executing
15 the tasks further comprises storing the desired state.

16

17 3. (Previously Presented) The method of claim 1, wherein executing
18 the tasks further comprises continuously executing an operation of a task of the
19 tasks until convergence of the desired state is identified.

20

21 4. (Previously Presented) The method of claim 1, wherein executing
22 the tasks further comprises storing a sequence of operations based on the tasks.

1 5. (Previously Presented) The method of claim 1, wherein executing
2 the tasks further comprises storing information corresponding to one or more
3 directory objects to which the workflow applies.

4

5 6. (Previously Presented) The method of claim 1, wherein executing
6 the tasks further comprises storing status information based on respective status of
7 at least one subset of the tasks.

8

9 7. (Previously Presented) The method of claim 1, wherein mapping
10 the state change to the object further comprises evaluating the state change to the
11 object based on a declarative condition stored as a text string on an object instance
12 of a content class defined by the directory schema.

13

14 8. (Previously Presented) The method of claim 1, wherein a task of
15 the tasks comprises any combination of a declarative condition or an operation that
16 is stored as a text string on an object instance of a content class defined by the
17 directory schema.

18

19 9. (Previously Presented) The method of claim 1, wherein semantics of
20 the workflow are based on a workflow schema.

21

22 10. (Previously Presented) The method of claim 1, wherein mapping the
23 state change to the object, semantics of the mapping are based on an event
24 association object schema.

1 11. (Previously Presented) The method of claim 1, wherein executing
2 the tasks at least one subset of the tasks are executed with respect to one another
3 based on an order of execution relationship comprising a finish-start relationship, a
4 parallel execution relationship, a precedence constraint relationship, or a task
5 priority relationship.

6

7 12. (Previously Presented) The method of claim 1, wherein executing
8 the tasks at least one subset of the tasks is executed with respect to one another
9 based on a precedence constraint relationship or a task priority relationship.

10

11 13. (Previously Presented) The method of claim 1, wherein the method
12 further comprises:

13 monitoring a status corresponding to a task of the tasks;
14 storing the status on a status monitoring object; and
15 wherein a content class in the directory schema defines the status-
16 monitoring object.

17

18 14. (Previously Presented) The method of claim 1, wherein the method
19 further comprises:

20 monitoring a set of directory resources affected by the workflow;
21 storing the directory resources on a status monitoring object; and
22 wherein a content class in the directory schema defines the status-
23 monitoring object.

1 15. (Previously Presented) The method of claim 1, wherein the method
2 further comprises:

3 monitoring a status corresponding to an operation of the workflow;

4 determining that the status comprises a failure status;

5 responsive to the determining, taking a corrective action to advance the
6 workflow in view of the failure status; and

7 wherein a content class in the directory schema defines the status-
8 monitoring object.

9
10 16. (Previously Presented) The method of claim 1, wherein executing
11 the tasks further comprises:

12 updating a status corresponding to a task in the workflow; and

13 responsive to the updating, evaluating the workflow to determine that a
14 next task of the tasks to be implemented.

15
16 17. (Previously Presented) The method of claim 1, wherein the tasks
17 represent an inverse set of tasks that were previously performed as part of a
18 different workflow.

19
20 18. (Previously Presented) The method of claim 1, wherein the tasks
21 implement a policy with respect to one or more directory resources, and wherein
22 mapping the state change to the object further comprises automatically
23 determining the workflow based on the policy.

1 19. (Previously Presented) A computer-readable medium comprising
2 computer-executable instructions to implement workflow responsive to a
3 directory object state change, the computer-executable instructions comprising
4 instructions for:

5 detecting a state change to an object in a directory; and

6 responsive to detecting the state change:

7 mapping the state change to the object to a workflow comprising a
8 set of tasks; and

9 executing the tasks to achieve a desired state in the directory.

10
11 20. (Previously Presented) The computer-readable medium of claim
12 19, wherein the instructions for executing the tasks further comprise instructions
13 for storing the desired state.

14
15 21. (Previously Presented) The computer-readable medium of claim
16 19, wherein the instructions for executing the tasks further comprise instructions
17 for continuously executing an operation of a task of the tasks until convergence of
18 the desired state is identified.

19
20 22. (Previously Presented) The computer-readable medium of claim
21 19, wherein the instructions for executing the tasks further comprise instructions
22 for storing a sequence of operations based on the tasks.

23
24 23. (Previously Presented) The computer-readable medium of claim
25 19, wherein instructions for executing the tasks further comprise instructions for

1 storing information corresponding to one or more directory objects to which the
2 workflow applies.

3
4 24. (Previously Presented) The computer-readable medium of claim
5 19, wherein the instructions for executing the tasks further comprise instructions
6 for storing status information based on respective status of at least one subset of
7 the tasks.

8
9 25. (Previously Presented) The computer-readable medium of claim
10 19, wherein the instructions for mapping the state change to the object further
11 comprise instructions for evaluating the state change to the object based on a
12 declarative condition stored as a text string on an object instance of a content class
13 defined by a directory schema.

14
15 26. (Previously Presented) The computer-readable medium of claim
16 19, wherein a task of the tasks comprises any combination of declarative
17 conditions and operations that are stored as a text string on an object instance of a
18 content class defined by a directory schema.

19
20 27. (Previously Presented) The computer-readable medium of claim
21 19, wherein semantics of the workflow are based on a workflow schema.

22
23 28. (Previously Presented) The computer-readable medium of claim
24 19, wherein the instructions for mapping the state change to the object, semantics
25 of the mapping are based on an event association object schema.

1
2 29. (Previously Presented) The computer-readable medium of claim
3 19, wherein the instructions for executing the tasks, at least one subset of the tasks
4 are executed with respect to one another based on an order of execution
5 relationship comprising a finish-start relationship, a parallel execution
6 relationship, a precedence constraint relationship, or a task priority relationship.

7
8 30. (Previously Presented) The computer-readable medium of claim
9 19, wherein the instructions for executing the tasks, at least one subset of the tasks
10 are executed with respect to one another based on a precedence constraint
11 relationship or a task priority relationship.

12
13 31. (Previously Presented) The computer-readable medium of claim
14 19, wherein the computer-executable instructions further comprise instructions
15 for:

16 automatically:
17 monitoring a status corresponding to a task of the tasks; and
18 storing the status on a status monitoring object; and
19 wherein a content class in the directory schema defines the status-
20 monitoring object.

21
22 32. (Previously Presented) The computer-readable medium of claim 19,
23 wherein the computer-executable instructions further comprise instructions for:
24 automatically:

1 monitoring a set of directory resources affected by the workflow;

2 and

3 storing the directory resources on a status monitoring object; and

4 wherein a content class in the directory schema defines the status-
5 monitoring object.

6

7 33. (Previously Presented) The computer-readable medium of claim
8 19, wherein the computer-executable instructions further comprises instructions
9 for automated operations for:

10 monitoring, by a status-monitoring object defined by a content class in the
11 directory schema, a status corresponding to an operation of the workflow;

12 determining that the status comprises a failure status;

13 responsive to the determining, taking a corrective action to advance the
14 workflow in view of the failure status

15

16

17 34. (Previously Presented) The computer-readable medium of claim
18 19, wherein the instructions for executing the tasks further comprise instructions
19 for:

20 updating a status corresponding to a task in the workflow; and

21 responsive to the updating, evaluating the workflow to determine that a
22 next task of the tasks to be implemented.

23

24

25

1 35. (Previously Presented) The computer-readable medium of claim
2 19, wherein the tasks represent an inverse set of tasks that were previously
3 performed as part of a different workflow.

4

5 36. (Previously Presented) The computer-readable medium of claim
6 19, wherein the tasks implement a policy with respect to one or more directory
7 resources, and wherein the instructions for mapping the state change to the object
8 further comprises instructions for automatically determining the workflow based
9 on the policy.

10

11 37. (Previously Presented) A computing device comprising:
12 a memory comprising computer-executable instructions for automatically
13 implementing workflow responsive to a directory object state change; and
14 a processor coupled to the memory for executing the computer-executable
15 instructions, the computer-executable instructions comprising instructions for:
16 detecting a state change to an object in a directory; and
17 responsive to detecting the state change:
18 mapping the state change to the object to a workflow comprising a
19 set of tasks; and
20 executing the tasks to achieve a desired state in the directory.

21

22 38. (Previously Presented) The computing device of claim 37, wherein
23 the instructions for executing the tasks further comprise instructions for storing the
24 desired state.

1 39. (Previously Presented) The computing device of claim 37, wherein
2 the instructions for executing the tasks further comprise instructions for
3 continuously executing an operation of a task of the tasks until convergence of the
4 desired state is identified.

5
6 40. (Previously Presented) The computing device of claim 37, wherein
7 the instructions for executing the tasks further comprise instructions for storing a
8 sequence of operations based on the tasks.

9
10 41. (Previously Presented) The computing device of claim 37, wherein
11 instructions for executing the tasks further comprise instructions for storing
12 information corresponding to one or more directory objects to which the workflow
13 applies.

14
15 42. (Previously Presented) The computing device of claim 37, wherein
16 the instructions for executing the tasks further comprise instructions for storing
17 status information based on respective status of at least one subset of the tasks.

18
19 43. (Previously Presented) The computing device of claim 37, wherein
20 the instructions for mapping the state change to the object further comprise
21 instructions for evaluating the state change to the object based on a declarative
22 condition stored as a text string on an object instance of a content class defined by
23 the directory schema.

1 44. (Previously Presented) The computing device of claim 37, wherein
2 a task of the tasks comprises any combination of one or more declarative
3 conditions and one or more operations represented by a text string stored on an
4 object instance of a content class defined by the directory schema.

5

6 45. (Previously Presented) The computing device of claim 37, wherein
7 semantics of the workflow are based on a workflow schema.

8

9 46. (Previously Presented) The computing device of claim 37, wherein
10 the instructions for mapping the state change to the object, semantics of the
11 mapping are based on an event association object schema.

12

13 47. (Previously Presented) The computing device of claim 37, wherein the
14 instructions for executing the tasks, at least one subset of the tasks are executed
15 with respect to one another based on an order of execution relationship comprising
16 a finish-start relationship, a parallel execution relationship, a precedence constraint
17 relationship, or a task priority relationship.

18

19 48. (Previously Presented) The computing device of claim 37, wherein
20 the instructions for executing the tasks, at least one subset of the tasks are
21 executed with respect to one another based on a precedence constraint relationship
22 or a task priority relationship.

23

24 49. (Previously Presented) The computing device of claim 37, wherein
25 the computer-executable instructions further comprise instructions for:

1 monitoring a status corresponding to a task of the tasks;
2 storing the status on a status monitoring object; and
3 wherein a content class in the directory schema defines the status-
4 monitoring object.

5

6 50. (Previously Presented) The computing device of claim 37, wherein
7 the computer-executable instructions further comprise instructions for:
8 monitoring a set of directory resources affected by the workflow;
9 storing the directory resources on a status monitoring object; and
10 wherein a content class in the directory schema defines the status-
11 monitoring object.

12

13 51. (Previously Presented) The computing device of claim 37, wherein
14 the computer-executable instructions further comprises instructions for:
15 monitoring a status corresponding to an operation of the workflow;
16 determining that the status comprises a failure status;
17 responsive to the determining, taking a corrective action to advance the
18 workflow in view of the failure status; and
19 wherein a content class in the directory schema defines the status-
20 monitoring object.

21

22 52. (Previously Presented) The computing device of claim 37, wherein
23 the instructions for executing the tasks further comprise instructions for:
24 updating a status corresponding to a task in the workflow; and

1 responsive to the updating, evaluating the workflow to determine that a
2 next task of the tasks to be implemented.
3

4 53. (Previously Presented) The computing device of claim 37, wherein
5 the tasks represent an inverse set of tasks that were previously performed as part of
6 a different workflow.

7

8 54. (Previously Presented) The computing device of 37, wherein the tasks
9 implement a policy with respect to one or more directory resources, and wherein
10 the instructions for mapping the state change to the object further comprises
11 instructions for automatically determining the workflow based on the policy.

12

13 55. (Previously Presented) A computing device comprising automated
14 processing means for:

15 detecting a state change to an object in a directory; and

16 responsive to detecting the state change:

17 mapping the state change to the object to a workflow comprising a
18 set of tasks; and

19 executing the tasks to achieve a desired state in the directory.

20

21 56. (Previously Presented) A computing device of claim 55, wherein the
22 means for executing the tasks further comprise means for storing the desired state.

23

24 57. (Previously Presented) A computing device of claim 55, wherein the
25 means for executing the tasks further comprise means for continuously executing

1 an operation of a task of the tasks until convergence of the desired state is
2 identified.

3

4 58. (Previously Presented) A computing device of claim 55, wherein the
5 means for executing the tasks further comprise means for storing a sequence of
6 operations based on the tasks.

7

8 59. (Previously Presented) A computing device of claim 55, wherein
9 means for executing the tasks further comprise means for storing information
10 corresponding to one or more directory objects to which the workflow applies.

11

12 60. (Previously Presented) A computing device of claim 55, wherein the
13 means for executing the tasks further comprise means for storing status
14 information based on respective status of at least one subset of the tasks.

15

16 61. (Previously Presented) A computing device of claim 55, wherein the
17 means for mapping the state change to the object further comprise means for
18 evaluating the state change to the object based on a declarative condition stored as
19 a text string on an object instance of a content class defined by the directory
20 schema.

21

22 62. (Previously Presented) A computing device of claim 55, wherein a
23 task of the tasks comprises any combination of one or more declarative conditions
24 and one or more operations represented by a text string stored on an object
25 instance of a content class defined by the directory schema.

1
2 63. (Previously Presented) A computing device of claim 55, wherein
3 semantics of the workflow are based on a workflow schema.

4
5 64. (Previously Presented) A computing device of claim 55, wherein the
6 means for mapping the state change to the object, semantics of the mapping are
7 based on an event association object schema.

8
9 65. (Previously Presented) A computing device of claim 55, wherein the
10 means for executing the tasks, at least one subset of the tasks are executed with
11 respect to one another based on an order of execution relationship comprising a
12 finish-start relationship, a parallel execution relationship, a precedence constraint
13 relationship, or a task priority relationship.

14
15 66. (Previously Presented) A computing device of claim 55, wherein the
16 means for executing the tasks, at least one subset of the tasks are executed with
17 respect to one another based on a precedence constraint relationship or a task
18 priority relationship.

19
20 67. (Previously Presented) A computing device of claim 55, further
21 comprising processing means for:

22 monitoring a status corresponding to a task of the tasks;
23 storing the status on a status monitoring object; and
24 wherein a content class in the directory schema defines the status-
25 monitoring object.

1
2 68. (Previously Presented) A computing device of claim 55, further
3 comprising automated processing means for:

4 monitoring a set of directory resources affected by the workflow;
5 storing the directory resources on a status monitoring object; and
6 wherein a content class in the directory schema defines the status-
7 monitoring object.

8
9 69. (Previously Presented) A computing device of claim 55, further
10 comprising automated processing means for:

11 monitoring a status corresponding to an operation of the workflow;
12 determining that the status comprises a failure status;
13 responsive to the determining, taking a corrective action to advance the
14 workflow in view of the failure status.

15
16 70. (Previously Presented) A computing device of claim 55, wherein the
17 automated processing means for executing the tasks further comprise means for:

18 updating a status corresponding to a task in the workflow; and
19 responsive to the updating, evaluating the workflow to determine that a
20 next task of the tasks to be implemented.

21
22 71. (Previously Presented) A computing device of claim 55, wherein the
23 tasks represent an inverse set of tasks that were previously performed as part of a
24 different workflow.

1 72. (Previously Presented) A computing device of claim 55, wherein the
2 tasks implement a policy with respect to one or more directory resources, and
3 wherein the means for mapping the state change to the object further comprise
4 means for automatically determining the workflow based on the policy.

5
6 73. (Previously Presented) A computer-readable medium comprising
7 workflow enabled directory schema for automated workflow implementation by a
8 set of computer-program instructions executable by a processor, the workflow
9 enable directory schema comprising a plurality of base object content classes
10 comprising:

11 a provisioning service content class to detect an event corresponding to a
12 state change in a directory object;

13 a workflow content class for storing a sequence of tasks;

14 an event association content class for storing declarative conditions to map
15 the state change to the directory object to an object instance of the workflow
16 content class; and

17 wherein the provisioning service content class is further configured to
18 execute the sequence of tasks corresponding to the object instance.

19
20 74. (Previously Presented) The computer-readable medium of claim 73,
21 wherein at least a subset of the base object content classes comprise a respective
22 flexible attribute data field that indicates a data type, the data type being used to
23 express various operational or data providing properties of the flexible attribute,
24 the various operational or data providing properties being independent of the data
25

1 type and independent of any modification to the workflow enabled directory
2 schema.

3

4 75. (Previously Presented) The computer-readable medium of claim 73,
5 wherein the sequence of tasks comprises any combination of a declarative
6 conditions and operations corresponding to directory-based objects.

7

8 76. (Previously Presented) The computer-readable medium of claim 73,
9 further comprising a status monitoring content class for storing a status of an
10 object instance of the workflow content class.

11

12 77. (Canceled)

13

14 78. (Previously Presented) A computer comprising the processor
15 coupled to a memory comprising the computer-readable medium of claim 73.

16

17

18

19

20

21

22

23

24

25